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(54) Title: ISOFLAVONOID METHYLATION ENZYME

(57) Abstract: Methods of genetically manipulating biologically active 4'-O-methylated isoflavonoids have been found based upon the regiospecificity of isoflavone 7-OMT in vivo. Upon transformation and expression of an isoflavonoid O-methyltransferase gene, up-regulation of IOMT in the transgenic plants can be used to increase the accumulation of 4'-O-methylated isoflavonoid phytoalexins, providing for increased disease resistance to the plant. Similar methods can be used to increase accumulation of 4'-O-methylated isoflavonoid nutraceuticals in plants. For down-regulation of IOMT in plants that naturally make 4'-O-isoflavonoid phytoalexins and 4'-O-methylated isoflavonoid nutraceuticals, IOMT gene sequences can be transformed in the antisense orientation.

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